

REMARKS

I. Status Of The Claims And The Rejections

Claims 1–10 and 12–15 are pending in the application. Claims 9, 10, and 12-15 stand rejected under 35 U.S.C. § 101, based on the assertion that they are not supported by either a specific and substantial utility or a well established utility and that there is no scientific basis to believe a fuel oil that is nonpolar would be affected by a magnetic field. (See Office Action, page 2, ¶4.) Additionally, claims 9, 10, and 12-15 stand rejected under §112, first paragraph. The Office Action alleges that one skilled in the art would not know how to use the claimed invention. (See Office Action, page 2, ¶4.)

Claim 9 additionally stands rejected under 35 U.S.C. § 112, second paragraph. It is stated in the Office Action that the terms "conventional" and "big clusters" render claim 9 indefinite.

Claims 1–9, 13, and 14 stand rejected under 35 U.S.C. § 103(a) for alleged obviousness based on a section of the Petroleum Products Handbook pages 4–8 to 4–37 ("Petroleum Products Handbook").

Claims 9, 10, 12, and 15 stand rejected under 35 U.S.C. § 103(a) for alleged obviousness based on CN ZL94113646.9 to Wenhao ("Wenhao '646.9") in view of U.S. Patent No. 5,985,153 to Dolan et al. ("Dolan '153"). Applicant respectfully traverses the rejections and respectfully requests reconsideration of the claims.

II. Rejections under 35 U.S.C. §101

Contrary to the assertion in the Office Action, claims 9, 10, and 12-15 comply with Section 101. The record is now replete with data in the form of examples

and Declarations that are evidence that the utility is specific and substantial and is credible. See, for example, Examples 5 and 6 and Declaration of Wenhao Wang and Exhibit A attached thereto. For instance, the viscosity of the processed diesel oil was reduced as compared to unprocessed fuel by up to 22.6%, the fuel savings with the processed fuel was up to 42.9%, and the reduction in CO emissions was up to 26.2%.

The MPEP provides:

In most cases, an applicant's assertion of utility creates a presumption of utility that will be sufficient to satisfy the utility requirement of 35 U.S.C. 101. ... [T]o overcome the *presumption of truth that an assertion of utility by the Applicant enjoys*, Office personnel must establish that it is more likely than not that one of ordinary skill in the art would doubt ... the truth of the statement of utility. ... *An assertion is credible unless (A) the logic underlying the assertion is seriously flawed, or (B) the facts upon which the assertion is based are inconsistent with the logic underlying the assertion.* Credibility as used in this context refers to the reliability of the statement based on the logic and facts that are offered by the applicant to support the assertion of utility. (Emphasis added. See M.P.E.P. § 2107.02 III.A.)

Again, Applicant asserts that the nano-granule fuel oil of the invention can be used in internal-combustion engines. The nano-granule fuel oil of the present invention exhibits such advantages as improvement of the fuel utility rate by 20-30% with reduced pollution of 50-80%, as well as, possible enhancement of vehicle power, elimination of carbon deposits, extension of engine service life, and reduction of engine noise. (See present application, page 5, 2nd paragraph.)

These assertions create a presumption of utility. The Office Action fails to overcome that presumption. According to the MPEP, such an assertion is credible unless

one of two exceptions is established, such that it is more likely than not that one of ordinary skill in the art would doubt the truth of this statement of utility based on the totality of evidence and reasoning provided. (See M.P.E.P. § 2107.02 III.A.) The Office Action does not fit either of these two exceptions.

With regard to exception (B) above, Applicant's assertion of utility is based on facts consistent with the logic underlying that assertion of utility. The Office Action fails to identify the inconsistency required under exception (B).

Applicant also respectfully asserts that exception (A) is not applicable. That is, the Office Action does not establish that "the logic underlying the assertion is seriously flawed." In this regard, the Office Action seeks to establish exception (A) by referring to an article by the Federal Trade Commission (FTC) titled, "FTC Halts Bogus Claims for 'Fuel-Saving' Device" (the "FTC Article"). In other words, the Office Action seeks to establish the "seriously flawed" exception by using this particular article to support the general proposition that all magnetized fuel savers do not have a substantial asserted utility. (See Office Action, page 2, ¶4.)

But it is the Office Action that is flawed. The FTC Article describes two specific magnetic fuel saving and emissions reduction devices that "did not save fuel or reduce emissions." (Emphasis added. See FTC Article, 1st paragraph.) That is, the FTC found that the FuelMAX and Super FuelMAX devices did not work. This finding is specific to the named devices.

Contrary to the implication relied on by the PTO, the FTC did not conclude that all magnetic fuel saver devices do not work. Such a conclusion cannot be drawn from this particular FTC Article. Indeed, the FTC Article states that the settlement

with the defendants bars them from performance or efficacy claims "unless they possess and rely upon competent and reliable evidence." (See FTC Article, 6th paragraph.)

Additionally, the technical details of the devices themselves and/or why they did not work are not disclosed. There is no convincing line of reasoning in this record to support the proposition that what the FTC found with regard to these two FuelMAX devices also applies to, or is even remotely related to, the claimed invention. No negative inference should fairly be given to the claimed invention based on the FTC Article. Most significantly, in contrast with the magnetic fuel saving devices in the FTC Article, the fuel oil and the method of preparing the fuel oil of the present invention do indeed save fuel and reduce emissions. This conclusion is supported by the totality of the evidence and reasoning in this record. (See Example 6 of the present application and Declaration of Wenhao Wang and Exhibit A attached thereto. For instance, the fuel savings with the processed fuel was up to 42.9% and the reduction in CO emissions was up to 26.2%.) One of ordinary skill in the art would not doubt the truth of Applicant's statement of utility. For at least these reasons, Applicant request withdrawal of the rejection.

Furthermore, it is stated in the Office Action, "[t]here is no scientific basis to believe fuel oil that is nonpolar would be affected by a magnetic field." (See Office Action, page 2, ¶4.) Applicant submits that fuel oil is composed of a number of different hydrocarbons. Many hydrocarbons are known to be diamagnetic. Diamagnetic materials may not have intrinsic magnetic dipoles, but dipole moments may be induced in them by action of an external magnetic field, like the magnetic field recited in claim 9.

Diamagnetic materials are affected by a magnetic field. Accordingly, whether or not fuel oil is nonpolar is not dispositive on the issue as to whether a fuel oil would be affected by

a magnetic field. For at least these reasons, Applicant respectfully requests that the Section 101 rejections of claims 9, 10, and 12 be withdrawn.

III. Rejections Under § 112

Claims 9, 10, and 12 are sufficiently enabled by the specification.

Applicant submitted a Declaration that one of ordinary skill in the art would know how to make and use the claimed invention in the Applicant's Response dated August 10, 2009.

See, for example, Declaration of Yuwen Huang, page 2, ¶7. Applicant requests withdrawal of the rejections.

Applicant has amended claim 9 to recite that a conventional fuel oil has molecular cluster granules of a size larger than 300 nm. The amendment to claim 9 is supported by the specification, particularly on page 8 in the last paragraph. No new matter is added by the claim amendment. Amended claim 9 is definite such that one of ordinary skill in the art would reasonably be apprised of the scope of the invention of claim 9. Applicant respectfully requests withdrawal of the rejection.

IV. Rejections under 35 U.S.C. §103(a)

Claims 1–9, 13, and 14 are nonobvious over the Petroleum Products Handbook. Claim 1 recites "said fuel oil contains substantially no granules greater than 10 nm." Similarly, claims 2 and 3 recite fuel oils that contain substantially no granules greater than 5 nm and no greater than 3 nm, respectively. It is stated in the Office Action that gasoline is a mixture of various hydrocarbons, such as C₅-C₁₂ hydrocarbons. (See Office Action, page 3, 7th paragraph.) It is also stated in the Office Action that the length

of one carbon atom is on the order of Angstroms. Based on these two statements, the length of a hydrocarbon molecule is calculated to be smaller than 3 nm. The rationale set forth for making the rejection is that since a hydrocarbon *molecule* is smaller than 3 nm, fuel oils inherently contain *granules* of less than 3 nm. In other words, the reasoning used to support the rejection is that one of ordinary skill in the art would have recognized that hydrocarbon molecules found in fuel oil are inherently less than 10 nm, less than 5 nm, and less than 3 nm according to claims 1, 2, and 3, respectively. A similar inherency rationale is apparently used to support the rejections of claims 5 and 6. No specific rationale is provided for rejecting claims 7 and 8, which recite that the fuel oil is heavy oil and bio-diesel, respectively. However, Applicant presumes that a similar line of reasoning is used to reject claims 7 and 8.

Applicant submits that there is no basis in fact and/or technical reasoning of record would reasonably support a determination that molecular cluster granule sizes recited in the claims necessarily flow from the teachings of the Petroleum Products Handbook. With respect to claims 1–8, while Applicant disagrees with the assumptions stated in the Office Action, particularly with regard to the way in which the molecular length of various hydrocarbons is calculated, Applicant notes that each of claims 1–8 recites a size limit for "granules," not a size limit on molecular length. With reference to the present application particularly on page 8, "granules," as recited in the claims, refers to molecular cluster granules. As is further noted on page 8, small angle neutron scattering (SANS) is an advanced experimental technology used to probe and measure microstructure of materials, e.g. the size of molecule cluster granules, and not molecular length. Specifically, Applicant used SANS to measure the density distribution of a fuel oil

in reciprocal space. This is evidenced by the SANS measurements of fuel oil of the present invention that is described on pages 8 and 9 and plotted in FIG. 3 of the present application. The granule size is calculated from the SANS data. (See, for example, Declaration of Yuwen Huang, ¶15.) While the molecular length may influence the microstructure of the fuel, molecular length of the individual hydrocarbon molecules and microstructure of a fuel comprised of many types of hydrocarbon are different features of the fuel. Simply stated, the size of a molecular cluster granule is not the same as the length of a single hydrocarbon molecule. The length of the molecules as calculated in the Office Action would not disclose to one of ordinary skill in the art the granule sizes and would not suggest the granule sizes that are recited in claims 1–8. The Office Action therefore fails to provide a *prima facie* obviousness rejection of these claims. Applicant requests withdrawal of the rejections.

In addition with regard to the rejection of claim 9, claim 9 is an independent claim that recites a method for preparing a fuel oil. Applicant submits that the Petroleum Products Handbook section provided fails to disclose any methods for preparing a fuel oil, and specifically fails to disclose passing a fuel oil through a magnetic field. As such, Applicant submits that the Petroleum Products Handbook fails to disclose or suggest the method recited in claim 9. The rationale provided for supporting the rejection fails to cure this deficiency. Therefore, the Office Action fails to set forth a *prima facie* case of obviousness of claim 9. For at least this reason, Applicant respectfully requests withdrawal of the rejection.

With regard to the rejection of claims 13 and 14, it is asserted in the Office Action that the fuel oil would remain unchanged after passing through the magnetic field

because there is no reason to believe that the fuel oil would be affected by a magnetic field. This assertion is factually and rationally unsupported. Claims 13 and 14 depend from claim 9. Applicant disagrees for substantially the same reasons as set forth above with regard to each rejection of claim 9 and the rejection of claims 1–8. Furthermore, the SANS data provided in the application is evidence that the fuel oil is changed by passing it through a magnetic field according to claim 9. For at least these reasons, the Office Action fails to set forth a *prima facie* case of obviousness for rejecting claims 13 and 14. Applicant respectfully requests withdrawal of the rejection.

Claims 9, 10, 12, and 15 are nonobvious over Wenhao '646.9 in view of Dolan '153. In the rejection, the Office Action correctly admits that Wenhao '646.9 does not teach a gap of less than 0.5 mm. It is stated in the Office Action, however, that it would have been obvious to one of ordinary skill in the art to use a gap that is less than 0.5 mm. It is also stated in the Office Action that one of ordinary skill in the art would expect that a gap that is smaller would produce a larger air gap magnetic field. The stated conclusion based on this rationale is that the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art. (See Office Action at page 4, ¶8.)

Applicant submitted evidence that the rationale upon which the rejections are based is incorrect in Applicant's response dated August 10, 2009. See Declaration of Yuwen Huang at page 3, ¶19, to page 5, ¶30, and Declaration of Wenhao Wang at page 2, ¶¶4–11. Consequently, the facts as presented in the Office Action do not support the rationale set forth therein. The Office Action therefore fails to provide a *prima facie* obviousness rejection. Applicant requests withdrawal of the rejections.

The Office Action provides further analysis that is similarly unsupported. It is correctly stated in the Office Action that Wenhao '646.9 does not appear to explicitly teach a magnetic field gradient of at least 1.5 Tesla/cm in a direction intersecting with the magnetic force lines of a magnetic field intensity of at least 8,000 Gauss, as claimed. (See Office Action page 5, ¶8.) The Office Action alleges that Dolan '153 provides the missing subject matter. The stated reasoning for combining Wenhao '646.9 with Dolan '153 is that it would have been obvious to one of ordinary skill in the art to apply the magnetic field gradient of Dolan '153 in the magnetic field cavity of Wenhao '646.9 because each reference allegedly teaches that use of magnetic fields to separate particles in a liquid medium. (See Office Action page 5, ¶8.)

Applicant submitted evidence that the rationale upon which the rejections are based is incorrect. See Declaration of Yuwen Huang, page 5, ¶¶22–24. Dolan '153 describes, in part, increasing the field gradient to improve separation of magnetically responsive particles, but Dolan '153 does not describe any effects of a magnetic field or a magnetic field gradient on the properties of fuel. In addition, Applicant submits that one of ordinary skill in the art would not have been motivated to combine Dolan '153 with Wenhao '646.9 because the fuel of Wenhao '646.9 is diamagnetic and thus it does not separate into any identifiable portions upon entering a magnetic field gradient described in Dolan '153. Consequently, one of ordinary skill in the art would not combine Wenhao '646.9 with Dolan '153 to arrive at the claimed invention.

The Office Action indicates that claims 9, 10, 12, and 15 are obvious because the same process should yield the same product. This rejection is factually and rationally unsupported. Claim 9 is an independent claim. Claims 10, 12, and 15 depend

from claim 9. Applicant has submitted evidence in the Response dated August 10, 2009, that the method is not the same because the results of the claimed method were unexpected at the time of the invention. See Declaration of Wenhao Wang at pages 2–3, ¶11. Applicant respectfully submits that each of these claims is patentable for at least this reason. Applicant respectfully requests that this rejection be withdrawn.

V. Conclusion

Based on these remarks, Applicant respectfully asserts that this case is in condition for allowance and respectfully requests allowance of the pending claims.

Applicant respectfully asserts that no additional fee is due other than the fee for a two-month extension of time. If any charges or credits are necessary to complete this communication, please apply them to Deposit Account No. 23-3000.

Respectfully submitted,

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